

# THE INFANTS' ENVIRONMENTAL HEALTH (ISA) STUDY: A BIRTH-COHORT STUDY WITH AN ECOSYSTEM HEALTH APPROACH IN LIMÓN, COSTA RICA

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**Background and Aims:** In Costa Rica, pesticide use at large-scale banana plantations includes permanent use of chlorpyrifos-impregnated bags and weekly aerial spraying of mancozeb, an ethylene bisdithiocarbamate (EBDC) fungicide (Barraza et al., 2011). The ISA study aims to evaluate and reduce pesticide-related health risks in infants living in banana growing areas.

**Methods:** The study population includes 450 mother-child pairs from the Matina County, with intensive large-scale banana farming. To assess prenatal pesticide exposure, women's urine samples were collected during the first, second and third trimester of pregnancy. Also, environmental samples such as dust and soil samples were collected. To obtain information on sociodemographic characteristics, lifestyle habits, occupational history, and pesticide exposure, structured questionnaires have been administered to the women during pregnancy and postpartum. Infants' birth outcomes have been abstracted from the newborns' Official Cards of Health. The association between prenatal pesticide exposure and fetal growth will be examined using multiple linear regression models.

**Results:** To date, we have enrolled 370 mother-child pairs of whom about 100 women have delivered.

About 25% of the participants live less than 100 meters away from the banana plantations. To assess prenatal mancozeb, chlorpyrifos, and pyrethroid exposures, urine samples (n=468) of 257 pregnant women are being analyzed for the pesticide metabolites ethylenethiourea (ETU), 3,5,6-trichloro-2-pyridinol (TCPy) and phenoxybenzoic acid (PBA), respectively.

In 12 of the 40 villages, environmental exposure was measured on four different times using passive and active air sampling and recollecting dust and water samples and are being analyzed for ETU, chlorpyrifos, and pyrethroid concentrations.

**Conclusion:** We will compare environmental exposure and personal exposure estimates. We will present variability in infants' prenatal exposure levels over time. The results of the relationship between prenatal pesticide exposure to chlorpyrifos, mancozeb and pyrethroids in relation to birthweight, and length of gestation will be presented for approximately 250 children.

**References:** Barraza D, Jansen K, van Wendel de Joode B, Wesseling C. Barraza D, Jansen K, van Wendel de Joode B, Wesseling C. *Environ Res.* 2011 Mar 9. [Epub ahead of print]